

Hanover

Engineering Associates Inc

NOV 30 2015

November 24, 2015

Mr. Jack Cahalan, Manager
Lower Saucon Township
3700 Old Philadelphia Pike
Bethlehem, PA 18015

RE: IESI Bethlehem Landfill
Southeastern Realignment
Capacity Expansion
Special Exception Application Rec'd 9-16-2015
Review Comments of the Technical Consultant
Committee
Hanover Project LS15-32

Dear Mr. Cahalan:

The Lower Saucon Township Technical Consultant Committee (TCC) has conducted their initial review of the above-referenced application. The Committee personnel involved in the review included the following:

- Mr. Jim Birdsall, PE
- Ms. Laouessa McNemar, PE
- Mr. Rich Sichler, PG
- Mr. Christopher Taylor, PG, HMI
- Mr. Jacob Schray, HMI

The initial comments generated by the Technical Consultant Committee (TCC) are presented in this letter for your consideration. These comments are based upon our general and technical knowledge of Landfill Operations and, in particular the existing and planned operations of the IESI Bethlehem Landfill and their plan and document submission for the above referenced application. Please note, the TCC has not reviewed any revisions to the original application that may have been submitted since September 16, 2015. This letter is basically the same letter that was issued as a draft dated October 26b, 2015, expect where marked with an asterisk, for example this paragraph. (*)

This review is separate from reviews and comments this Committee has regarding the IESI capability with PADEP regulations that may be covered by other review letters. Also, this review did not include a review of the IESI capability with the Township Subdivision and Land Development Ordinance or the Township Zoning Ordinance. We understand that these reviews are being done by other consultants.

The review of IESI Southeastern Realignment documents is ongoing with regard to their various submissions to the PADEP and this review letter is limited to the review of the Special Exception Application. It does not cover all potential concerns with the proposed realignment and capacity expansion, since the review by TCC of the proposed expansion design will continue through the Phase 1 Environmental Assessment, the PADEP public hearing process and through the PADEP technical Phase 2 review period.

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I. INTRODUCTION

IESI PA Bethlehem Landfill Corporation (IESI) has submitted an application to the Pennsylvania Department of Environmental Protection (PADEP) for a proposed permit modification to the IESI Bethlehem Landfill disposal area and capacity in what they are terming the "Southeastern Realignment." This application constitutes a major permit modification. Although the applicant's title is termed the "Southeastern Realignment," the actual plans show that the central and eastern sections of the Landfill will be utilized for capacity increases. Also area of excavation and landfill activities are proposed in the east, central and western sections of the Landfill. .

II. CONTENTS OF APPLICATION SUBMISSION

Lower Saucon Township provided Hanover Engineering with the following documents for the review of the Special Exception Application:

1. Notebook- labeled Special Exception Application Dated September, 2015 Containing 16 Attachment Tabs.
2. Plan Set- labeled LAND DEVELOPMENT & SITE PLAN consisting of 17 sheets dated last revised 8-17-2015. This is Attachment 1 in the Notebook. The cover sheet of this set is entitled July 2015 with a revision of August 2015. Plan sheets 1 and 1A referenced throughout the Special Exception Application Attachments as "Existing Site Conditions" do not exist in this Plan Set. The existing conditions are shown on sheet 3 of 17.
3. Plan Set- labeled POST CONSTRUCTION STORMWATER MANAGEMENT PLAN consisting of 6 sheets dated 8-17-2015. This is Attachment 10.
4. Plan Set- labeled E&S CONTROL PLANS consisting of 16 sheets dated December 2014. This is Attachment 14.

A copy of these documents were distributed to the other members of the Technical Consultant Committee, Ms. Lauressa McNemar, PE, and Mr. Rich Sichler, PG for them to provide review comments relative to their area of expertise.

III. TECHNICAL CONSULTANT COMMITTEE REVIEW COMMENTS

A. GENERAL COMMENTS

The comments in this letter will follow the listing of the 16 Attachment Sections of the Application Notebook. These sections include the plan sets.

The TCC believes that it is important to make note of certain important conditions and circumstances that have changed since the last major permit modification application and Special Exception Approval and certain aspects of this proposal which have not been encountered during prior applications, as follows:

1. Numerous complaints of Landfill odor have been received in the last two years.
2. The Bethlehem Renewable Energy Plant has been built. This facility uses landfill gas to generate electricity
3. Flows in the leachate detection zones are a concern, in terms of both quantity and quality.
4. The use of offsite soils was not proposed for the last Special Exception and major permit modification. The applicant is, for the first time, committing to the use of offsite soils for the construction of this expansion. This raises issues regarding the trucks that will be used to haul soils to the site, including: the number of trucks involved; the traffic routes they will be allowed to take; whether they will be required to go through the truck wash, etc.
5. For the first time, this proposal entails working on unlined sections of the property. The applicant will be removing the existing cap on a portion of the landfill that is closed. During this operation the exposed garbage will allow the generation of leachate during precipitation. These areas will used as a landfill before liners and leachate collections system were required.
6. The applicant is proposing major area where they will be placing waste over existing waste.
7. The elevation of the proposed landfill cap is higher than currently approved and this higher elevation is proposed to extend over a large section of the property.

B. SPECIFIC REVIEW COMMENTS FOR THE SPECIAL EXCEPTION APPLICATION

Listed by Attachment Number:

Attachment 1. Preliminary/Final Land Development Plan and Site Plan August 2015

These plans are being reviewed by the Township Planner, Township Planner and Township Planning Commission. It is recommended that these reviews be included with the information provided to the Zoning Hearing Board for their consideration of this application.

The TCC has also reviewed these plans for issues related to specific TCC concerns.

Sheet 3 of 17 shows Existing Conditions but the southeastern area labelled as "Soil Stockpile Area" is not existing. This is the general area that was labelled "Potential

Soil Stockpile Area” on previously approved plans, but we do not believe it was ever used.

Attachment 2. List of Buildings and Other Improvements

The list provided in this section does not include the “citizen recycling dropoff center”.

Attachment 3. Narrative

This narrative describes some of the relief the applicant is requesting from zoning ordinance provisions, but this may not be a complete list of the relief items that may be needed. A full review of the Zoning Ordinance and Subdivision and Land Development Ordinance provisions is being conducted by the Township Planner and Engineer and it is recommended that the Zoning Hearing Board be provided with their comments.

Additional the Township and IESI have entered into many agreements over the years. Provisions of these agreements should be reviewed for any impacts they may have on the current application.

Attachment 4. Property Owner List

No Comments

Attachment 5. Carbonate Geology

No Comments

Attachment 6. Environmental Protection Analysis

The Site Capacity Calculations are to be reviewed by the Township Planning Consultant.

Many other issues related to the protection of the environment are described in the IESI application to the PADEP for this proposed Major Permit Modification. Comments from the Technical Consultant Committee on these other issues are included in this letter under the heading entitled: “C. - Other General Comments and Questions Regarding the Submitted Application”

Attachment 7. Traffic Impact Analysis

The applicant reports that there will be no change traffic as compared to prior approved conditions. There statement is supported by a letter and report from Pennoni Associates, dated Dec. 8, 20014.

This section of the report provides the opinion that “the existing traffic route will not be impacted by this project”. This opinion is based upon the presumption that

the current number of waste disposal trucks will continue and the current access and departure routes for these trucks will not be changing.

This opinion and justification do not take into account the new traffic that will be resulting from the transportation of off-site cover soil material and cell construction and capping material deliveries to the landfill site. The impact of these additional trucks should be identified and mitigated. The number of trucks, time of day of deliveries, truck routes, and impacts associated with intersection congestion, noise and vibrations should be identified.

Information provided to the PADEP by the applicant on their PADEP application Form F - Soils information, Phase 1 states that all cell construction material, daily, intermediate, and final cover is proposed to be obtained off site. The air quality form G(A), identifies dust emissions, but does not appear to account for all the trucks that will deliver the subbase, liner or protective cover materials, MSF wall construction materials, or deliveries of materials for leachate collection, gas control, or stormwater management construction and cover soil over the life of the requested permit. The staging and construction of the various new cell developments, as well as mandatory closure and capping of completed site areas, indicate this property will be a continuous heavy construction project with near continuous construction and soil hauling truck traffic for the next 5.5 years of projected lifetime. Noise, traffic and fugitive dust emissions from this increased heavy truck traffic flow has not been addressed in the application. This type of truck traffic was not considered in previous traffic studies for the Phase IV Special Exception Approval and will be a significant impact resulting from this proposed expansion.

Traffic impacts and patterns (including proposed and/or restricted use of certain public roads in the Township) associated with operating and construction materials delivery to the site, storing at the site, and haul road movement of construction materials within the site, should be explained.

Although a Traffic Control Plan is in place and implemented, it has been only partially effective in making a lasting reduction in overweight vehicles entering the site. Additional construction and soil hauling trucks which will be entering the site on a continuous basis, are not monitored under this plan, but could be.

The Traffic Impact Evaluation prepared by Pennoni Associates, Inc., dated December 8, 2014 indicates that the waste transportation vehicles approaching and leaving the IESI site have insignificant impacts on the traffic volumes along Route 412 and/or at the intersections of Route 412 and I-78. However, there did not appear to be any information on the more local impacts of waste vehicles and offsite cover soil trucks as they relate to the ongoing and increasing usage of Applebutter Road and Shimersville Road.

Attachment 8- Neighborhood Protection Analysis

Subsection E of this attachment, entitled "Smoke, dust, etc." and Subsection J entitled "Other" refer to Neighborhood Protection issues that are also evaluated during the application being submitted to the PADEP for this expansion. Air Quality and PADEP Form D comments that the TCC has prepared for the Township's review of the application submitted to the PADEP include the following:

Air Quality Impact (PADEP Application Attachment 13)

This section of the report indicates that IESI will be amending their Title V operation permit. This section also indicates that IESI has submitted a request for "Air Plan approval."

This section also provides the opinion that "no adverse air impacts to the surrounding community are anticipated."

The fugitive dust emission estimates from vehicles do not appear to include all the trucks required to deliver daily, intermediate and final cover, sub-base and protective cover materials based on the capacity and number of trucks listed versus quantities of materials needed as presented in the various narratives, plan sheets and closure plan documents. The emissions estimate also accounts for only one bulldozer daily and no other earth moving equipment during this 5.5 year extensive operating/new construction/closure operation. Earth moving equipment has the highest dust emission factor of any of the other activities. As noted elsewhere in these comments, significantly more truck traffic will contribute to fugitive dust emissions, noise, and traffic increases, which have not been identified as harms or proposed to be mitigated.

There is no indication in the application documents that surface emission monitoring for methane or other waste degradation emissions will be monitored during and directly at locations of cap removal or refuse excavation for gas system trenching in the piggyback areas or during Cell 4E waste excavation. This should be required on a daily basis starting when any cap is first removed and during waste removal and reburial until all areas are sealed. A separate odor control operations plan identifying trigger readings and immediate odor elimination requirements should be developed, to mitigate existing harms and future harms. The readings should be documented and open for inspection by both the PADEP and the Host Municipal Inspector. Requiring the continual on-site monitoring of emissions will also quickly identify the source area, and ensure that the problem is immediately corrected, instead of relying on continuous odor complaints and once-per-quarter surface emission monitoring. Neither the complaints from area residents nor SEM results has resulted in any continuous operations improvements to eliminate these harms.

Prevention of additional sources of air contaminants and odors released by (1) peeling off the cap of 26 acres of existing in-place refuse; (2) excavation into that old fill for gas system installation; and (3) re-excavation of over 315,000 cubic yards of waste relocated from Cell 4E in order to properly close the western boundary should be addressed.

Attachment 9 PADEP Major Permit Modification for the Southeast Realignment Form I

The Attachment describes the stormwater and soil erosion protections and facilities to be provided by IESI. A review of these documents is being provided by the Township Engineer, the LVPC and the PADEP, as part of the Land Development Plan reviews and the PADEP permitting process. The TCC intends, however, to provide applicable review comments on these plans after the PADEP notifies the Township that the IESI Application is proceeding to the "Technical Review Phase". The PADEP is not yet reviewing these plans as the contents of the plans may change based upon the recent PADEP Environmental Assessment review. Any action on the Special Exception Application should be conditioned on the future review and adequacy of the controls proposed as reviewed and approved by the PADEP.

Attachment 10 Post-Construction Stormwater Management Plan

The Township Engineer and PADEP are reviewing these plans.

Attachment 11 Land Development Plan Project Narrative

The paragraph under Daily Operations states "No operational changes are proposed...including but not limited to...equipment utilized on site, method of disposal..." Daily operations at the facility and method of disposal will change significantly. Daily operations will include normal daily receipts from incoming refuse trucks, regular operations with placement, compaction and daily covering by IESI employees. Daily activities will also include construction activities related to MSE wall construction, new cells construction, old refuse relocation across the site, removal and disposal of existing cap over 26 acres, ongoing capping of 40 acres. Daily operations will not all be conducted by IESI employees. Contracted operations will also be occurring on a daily basis. The total daily operations will contribute to the traffic to, from and on the site, noise, dust, and safety concerns for employees, contractors, and residents using the recycling drop-off area. The operation will resemble more of a combined landfill operation plus a significant construction operation over the 5 year life. The Land Development Project Narrative should identify all the various daily operating components discussed above with the estimate of number of workers and equipment that will be on site for each operation type (daily employee operations, capping contractor, soil hauling/earthmoving contractor, cell construction contractor, refuse relocation contractor etc.)

Attachment 12. Preparedness, Prevention and Contingency Plan

The PPC Plan included is for current activities, not proposed activities, and is outdated for current activities. The listed District Manager and

Primary Emergency Coordinator responsible for plan implementation is no longer employed (Sam Donato). There are also references to "Landfill Manager" responsibilities, with no name identified. The Special Exception review should require an updated PPC Plan for current activities.

The Special Exception Application should include a PPC Plan developed for the proposed operations. This would involve updating the PPC Plan Attachment #4 to include all listed controls related to cap removal activities, and include the new evacuation routes for the new proposed interior road locations.

The Procedures in Attachment #4 of the PPC Plan adequately address controls during waste relocation, including litter, dust, odor, noise, leachate and storm water impacts. However, procedures should include the controls during cap removal activities on lined and unlined areas in this Special Exception Application. Additional controls to prevent rainfall from infiltrating onto unlined refuse areas when a cap section is removed should be included. Cap removal and refuse relocation activities will be occurring throughout this expansion operation timeframe.

There are important environmental and neighborhood protection measures in Attachment #4 of the PPC Plan that are not identified in the Form D PADEP major permit modification application as referenced in the Special Exception Application Attachment 8 Neighborhood Protection Analysis, narrative and Item J. The Neighborhood Protection Analysis should include an additional Item K on page 4. directly referencing the environmental and neighborhood protection procedures of an expanded Attachment #4 in PPC Plan. The updated procedures should also be incorporated into the PADEP permit application, as the effectiveness of environmental and neighborhood protection measures are dependent on these procedures being followed.

Also the following comments are noted:

Page 2 states that there is "an adequate quantity of onsite cover material". This is not accurate.

Page 7 and 10 the new management team should be listed.

Page 23 IESI should also list St. Lukes Hospital at Rt 33 and Freemansburg Ave. if they accept emergency patients.

Page 25 IESI should provide more information on how storm water runoff damage onto to Redington Road and Applebutter Road can be minimized and if mud or rocks are carried onto these roads, what emergency responses will be provided.

Page 27 any new revision should be listed.

Attachment 2-Evacuation Routes will need to be revised as work proceeds.

WRP-1 and 5- This section describes what IESI intends to do if they find that Waste Relocation releases an odor. It would be helpful to know what experience other landfill operators have had with odor generation during Waste Relocation work.

Attachment 13. PA Solid Waste Permit No. 100020

No Comments

Attachment 14. Erosion and Sedimentation Control Plans

These plans are to be reviewed by the PaDEP

Attachment 15. Landfill Closure Plan

Reference is made to The Landfill Closure Plan and Land Development & Site Plan, sheets 13 of 17 (Landfill Time Line table), and Sheets 15 and 16 (Cell Development Schedule, Steps 1 through 7). There is no identification as to when the various cells will be capped, or when each Step of capping will be completed. The only significant increase in capped area over existing conditions appears to occur at the end of Step 6 of 7 capping steps. Existing capped areas are shown as 92.3 acres with an additional capped area after step 6 of 118.8 acres. The capped areas are interpreted to be final capped, not temporary caps. The Applicant should confirm that all capped areas shown are final caps. The Applicant should provide a defined cap completion schedule for each Step 1 through 7 identified on sheets 15 and 16, and add the final capping schedule to the Cell Development Schedule on sheet 13. It is not acceptable to wait until the final year or two to complete capping Steps 1 through 7. Capping should be installed on a semi-annual or annual schedule on whichever cell or step is completed in that year on the schedule. According to the sequence shown this would result in capping an additional 6 to 17 acres per year over the five year life of the facility.

Impacts on the neighborhood could be reduced by filling and closing from west to east or from east to west---so that larger areas could finished and closed permanently.

Attachment 16. Hydrogeologic Supplemental Information

The provided narrative indicates that a fracture trace analysis was performed but no fracture traces were identified. Therefore, fracture trace locations must not have been used to aid in the location of proposed replacement abatement wells. This provides little assurance that the proposed abatement wells will perform as needed. Abatement wells need to provide hydraulic control of the fractured bedrock aquifer in a manner that will establish a capture zone for potentially impacted groundwater migrating from the landfill area. An established groundwater capture zone is particularly important with the proposed disturbance of in place waste located above portions of the landfill with either no liner system or a non-compliant liner system. It is recommended that the applicant propose a method of evaluating the performance of the replacement abatement wells to demonstrate that the wells will exert sufficient hydraulic control to establish an effective capture zone down gradient of the proposed cell construction. Such a demonstration might include aquifer testing and groundwater modeling. The applicant is proposing to eliminate three abatement wells and install two. If the eastern most well were to fail or go offline a large gap in coverage would result. A third abatement well would not

only cover that area more completely, it would also provide redundancy in the event of a well malfunction.

C. OTHER GENERAL COMMENTS AND QUESTIONS REGARDING SUBMITTED APPLICATION

During the review of the Form D and this first Environmental Assessment Process (EAP), the following concerns and questions were developed. These comments and questions do not constitute a full review of any of the technical aspects of this submission but are provided in a way of preliminary comments.

1. GIF (General Information Form):

- a. *Samuel Donato - under client and site information. Mr. Donato is no longer employed by IESI to the Township's knowledge. The application and any future application supplements should be certified by the appropriate official, and new certification forms provided if Mr. Donato is no longer the IESI authorized contact, spokesperson or responsible official for this application, future application supplements, or for the proposed construction and performance of the design as submitted.*

Item 1. Existing known environmental harms associated with landfill gas emissions have not been fully mitigated. Offsite odors continue to be a reported problem and concern. Documentation exists as to the numerous odor complaints received by IESI, the Township and PA DEP. The citing of excess methane emission readings by both IESI and PA DEP, and tracked by the Township since 2010 identify methane readings above regulatory limits in every Surface Emission Monitoring (SEM) event. PA DEP attributes these exceedances to lack of adequate cover (either in spot locations or area-wide) during current operations, and IESI then addresses the problem as required by the PA DEP. Lack of adequate cover in many areas of the site was also documented by PA DEP in a site inspection August 27, 2014. Although the documentation confirms known harms of odor and air emissions attributed to inadequate cover practices, IESI has not been issued any substantive penalty, and the issue is temporarily mitigated by PA DEP directing actions until the next surface emission monitoring again indicates exceedances. The monitoring of emissions on only a quarterly basis by IESI and about twice per year by PA DEP, does not determine if exceedances across the site are continuing between those testing periods. The odor and gas exceedance problems are considered known harms with a long duration of recorded occurrence, a high frequency documented by numerous parties and a high intensity as also reported and documented. These existing harms are not proposed to be mitigated by the application, and several aspects of the proposed design (removal of over 30 acres of cap and excavation of existing waste discussed later in these comments), is expected to exacerbate the gas release and odor harms.

Another known environmental harm that has not been addressed prior to submission of this application, nor mitigated or proposed to be mitigated, is the presence of leachate in the detection zone of one or more leachate management chambers originating from the Phase III lined area. This known harm has not been mitigated and there is no plan for further investigation or mitigation in this application. This condition has been a documented concern of the Township

since the Township first brought this to light in the year 2000. This harm is possibly associated with some type of breach in the primary liner system, has increased in frequency (the flow is continuous), of long duration (since 2000), and of high intensity (exceeding the 100 gallons per acre per day triggering additional actions by the PA DEP). The application calls for removal of capped areas in Phase III, and more waste placed in this currently closed and capped area of the landfill. The potential harm of additional leachate generated by these new Phase III activities and resulting in even more leachate not being captured by the primary collection system has not been addressed.

- b. Page 7 of 7 – Final certification should be signed by an authorized representative of the applicant. Mr. Donato is no longer employed by IESI Bethlehem Landfill.*
- 2. Form A (Application for Municipal Waste Permit) – We recommend that the public notice be issued to every adjacent property owner. The Affidavit should be signed by a current authorized representative.*
- 3. Form B (Professional Certification) – The soil scientist certification has not been completed.*
- 4. Form C-1 (Compliance History Certification) – The Compliance History Form HW-C of June 10, 2014 (referred to and not included) may name Mr. Samuel Donato within its contents. If that is the case, the HW-C should be updated to identify his replacement.*
- 5. Form F (Soil Information) – This section states that soil information is not applicable. If soils are to be imported, it is recommended that detailed soils information be provided.*
- 6. It is recommended that the Lower Saucon Municipal Authority provide review comments on proposed changes to the western edge of the landfill near the tower and waterline.*
- 7. Emergency Response – It is recommended that IESI verify that the City of Bethlehem Fire Department will remain available to fight fires at the landfill and that annual training of Emergency and Fire Company groups is still provided in accordance with Host Municipal Agreement.*
- 8. Industrial Waste Permitting – It is recommended that IESI verify that they will be able to continue utilizing the City of Bethlehem Waste Water Treatment Plant, and as a backup, the Allentown Waste Water Treatment Plant for Leachate Treatment.*
- 9. Air Quality Reviews – It is recommended that all Air Quality Permitting (for modifications and extensions of existing permits) be coordinated with the application process for this expansion.*
- 10. Mechanically Stabilized Earth (MSE) – It is recommended that IESI retain a Consulting Engineer to inspect the construction of the wall and provide a certification, upon its completion, that it has been constructed in accordance with certified design plans.*
- 11. Seismic Stability (Attachment 24) – D.A. Geologic (Seismic)(includes referenced Form 24) – Review continues (these preliminary comments do not yet consider a review of the MSE wall stability analysis or a complete technical review of the liner system Form 24).*

- a. *The stability analysis narrative in Attachment 24-8 states that the new landfilling will occur over old Phases 1 and 2 of the site (16.25 acres), where non-compliant liners exist, and also over the area identified as "original landfill area" or "old fill" as designated on various plan sheets (an additional 6.16 acres). This description is different than what was conveyed at the public meeting on March 11, 2015, where the underlying areas were described as having "non-compliant liner systems." There is no liner under the "old fill" area. There were statements made during the public meeting regarding the intent to remove the existing cap and/or final cover soils on the Phases 1, 2 and old fill areas in approximately 5 acre sections prior to beginning reconstruction of a new gas collection system for the existing fill, then constructing the new liner on top. There is no construction or operations plan detailing, or even summarizing how the whole process will occur, and in what relative or timing sequence. Exposed, uncapped old fill areas will remain exposed to rainfall and could result in new leachate generation in unlined and non-compliant lined areas. The length of time and amount of area at any time this condition is to exist is not identified. The stability analysis does not seem to address a potentially wet surface of old refuse forming the foundation of sub-base stability for the added piggyback waste. New leachate could be generated in areas of unlined or non-compliant liners where the cap or existing cover is removed. There is no plan to prevent this leachate development or a plan to collect and control it within this application.*
- b. *The characteristics and compressibility of the decades old waste in Phases 1, 2, and the old original landfill "was assumed based on published values and load tests on waste from studies at other MSW landfills." (Attachment 24-8, Section 6.1.2) However, the waste buried in the older sections consist of much construction/demolition debris, among potentially unregulated waste during the time period it was filled (1940s to 1980s). The waste was in place before the requirements of the 1988 municipal solid waste regulations which required compaction of the waste in 8 feet lifts, before different handling criteria for construction demolition waste landfills versus municipal waste landfills was enacted, and before RCRA (hazardous waste regulations) of 1976. Although eluded to in various sections of the stability analysis and other narratives, that many borings were taken and analyzed, borings or actual site characterization of the in-place refuse in Phases 1, 2, and the old fill have not been included in this application. There has been available fly over topography taken of the entire permitted area annually during Phases III and IV fill activities. The determination of settlement of the realignment area does not seem to have been evaluated from this available topographic data and used in the design. The geophysical survey is limited in useful data for this proposed operation in that large voids, existing moisture content, and increased moisture content of the old fill once the cap is removed, do not appear to be considered. It appears that full reliance on the stability of the new completed refuse mass is on the manufactured liner system to withstand whatever would happen below it, and no reliance on the stability of the waste mass beneath. This poses a concern with the design and stability of the piggyback waste area under static and seismic conditions.*
- c. *How many and which other landfills in Pennsylvania with similar age and type of waste that was buried in the 1940s through 1980s have been studied as to waste mass stability under similar new loading conditions as proposed here? Have those sites' long term history of piggyback waste over decades old uncharacterized waste been studied regarding differential settlement? Where differential settlement should be expected to occur, how is the geogrid evaluated after surface evidence of settlement to determine if it is holding over the void, thereby verifying the primary liner has not been compromised?*

- d. *Soil borings were presented from various historical drill logs. These drill locations are previous or existing monitor well locations, outside the existing waste boundaries proposed for piggyback fill. There were no borings, bearing capacities or subsurface investigation of the Phases 1, 2 or original unlined landfill areas to determine the in-situ characterization of waste that is expected to support a new liner and waste load. The use of book values instead of actual site values for the analyses does not lend confidence to the stability of the proposed expansion.*
- e. *Because the existing waste has not been characterized for this design, it must be considered that there may be closed metal or plastic containers, drums, or pockets of old wastes which are not even permitted to be buried in the compliant lined portion of the facility. Without documentation to the contrary, the potential for any number of hazardous, flammable, explosive, medical, or radioactive wastes underneath the new liner system and waste pack does exist. The added weight of additional refuse in this expansion could potentially break old containers open creating new mobile sources of contaminants which would be a threat to the groundwater aquifer. How does this design eliminate this risk?*
- f. *The geophysical survey conducted at the site generally detects metals in the upper 20 or so feet of old refuse. This survey did not discuss voids but did indicate areas of "rubble fill," a berm area that was surveyed, and the suggestion that mining had occurred in some areas in the last century due to piles of rock detected. In addition, it is known that there is much construction/ demolition waste in this older landfill area, and stumps and other bulky clearing debris in the area referred to as the "notch" (which is not shown on the landfill drawings). The variability in waste type, placement location, depth, moisture, and level of degradation can be expected to result in differential settlement, and shifting under various load conditions (static and earthquake) much differently than a typical literature-based municipal solid waste pack that is more uniform in nature. How are the assumed values used in the stability analyses considered to be representative of what is actually buried in Phases 1, 2 and the old fill with no actual underlying waste data obtained for the design? The reaction of large potential existing void spaces, and larger area shifting of potential rubble piles in the old landfill areas under earthquake loading conditions does not seem to have been considered in the stability of the new proposed piggyback waste mass. Have this and any other such areas been further investigated?*
- g. *The gas collection system modifications on Phases 1, 2, and old fill areas call for the cutting off of existing vertical gas collection wells (19) at grade, and backfilling with bentonite (Plan Sheet LFG-1). With the new piggyback waste load further compressing the old in-place waste beneath it and around the old wellheads, how will these permanent and top cut well casings be prevented from becoming puncture points on the new secondary and potentially primary liner system above them? Has the design determined an additional expected settlement of the underlying area that ensures these abandoned in-place gas well casings (to be cut off at existing grade) do not breach the sub-base of the new liner system under a maximum settlement scenario?*
- h. *It is known that the Landfill slope stability, settlement and bearing capacity evaluation was performed by a different consultant than the MSE wall. It is known that the reaction of the waste mass to failure under static or earthquake load conditions will also have forces against the MSE wall. Has the stability and failure scenarios of the entire waste mass area been considered in the static and seismic stability of the MSE wall?*

Based on the comments above, stability of the designed waste mass is of concern under static and earthquake loading conditions. Potential harms of extremely high intensity could result from a failure of this design. The duration of harms in such a case would be lengthy and potentially irreversible by causing damage to neighboring properties, and onsite engineered control systems (liner, cap, leachate collection, gas management, storm water management systems, for example).

12. *Form 1 (Facility Plan):*

The Facility plan Form 1, Attachment 1-1, Page 3 table shows the Cell 4-E will be the last area to be filled. Given its final grade continuity with the remaining Phases III and IV, and that the timeframe to fill Cell 4-E is only 4 months, it is unclear why the western half of the facility is not being filled and capped first. The immediate completion and follow-up capping of the western portion of the facility would most certainly better control landfill gases. It is requested that PA DEP require the facility to develop a construction/fill/capping/operations plan, completing to grade and then final capping. The amount of uncapped area should be minimized by developing a staging plan that does not allow uncapped areas across the entire site. By the application mapping, it can be stated that since permitting of Phase IV in 2003, 30 of the 46 acres of the entire Phase IV remains uncapped across the entire hillside, while the remainder of Phase IV and many portions of the previous Phase III (permitted in 1993) have only been capped in recent years. In addition, as part of this application, portions of the capped Phase III will actually be removed. The capping/staging plans, Sheets LF-26, 27, 28 have no schedule for capping, only a general sequence. The acreage of capped versus uncapped area for each stage, and the length of time any active area remains uncapped should be identified. Capping is the single most effective method of containing and control landfill gas emissions and odors. It appears from the information provided that even more area will become uncapped or active during this operation than currently exists. The closure sequence should demonstrate much less uncapped area in each phase depicted on the referenced plan sheets, with committed time frames for the capping.

13. *Site Capacity:*

Ability for existing site to support the proposed expansion- Comments on space demonstrated to support the new construction, daily operations, and capping activities simultaneously.

It is stated in the application that there is no change to the existing Phase IV Operations Plan. However, changes in operations will include several items which are significantly different than Phase IV. A detailed operations, construction and staging plan to identify the following items and sequence of activities was not identified, including:

- *Stockpiling of soils and construction materials – Soil stockpiling for daily and intermediate cover is indicated on the Erosion and Sedimentation Control Plans in the southeast corner where the new MSE wall is proposed. There are extremely limited remaining areas within the permit boundary that are unfilled. Sufficient non-capped or non-active areas of the site for stockpile of construction materials, including additional sub-base soils, protective layer stone, piping and liner materials area staging should be clearly demonstrated, especially with an aggressive construction, fill, cap and close plan of approximately 6 years total.*

- *The Phase IV permit does not allow any stockpiling of soils/materials on capped areas due to the potential for cap damage, as demonstrated during that previous permit expansion review. The existing capped areas with the existing gas collection systems that are to remain functional and intact until modified or replaced should be delineated on the site plans and protected from all potentially damaging haul road traffic and staging activities.*
- *The process of cap removal of existing areas (proposed "piggyback" areas) should identify where and how the removed cap materials will be stored, staged, disposed or reused, without affecting existing capped areas.*
- *The method of excavation of existing waste, staging, re-burial and complete odor suppression for both the re-alignment area waste excavated (trenches dug 3½ feet into the waste with additional 6 feet deep by 6 feet wide drainage pits throughout the area), and the excavation and removal of over 315,000 cubic yards of waste from cell 4E should be explained.*

The plans and narratives do not clearly demonstrate the ability for the existing permitted area to support all existing and new activities associated with the expansion without harm to existing on-site systems, nor do they demonstrate how the new harms will be mitigated.

OTHER COMMENTS ON ENVIRONMENTAL PROTECTION

Scenic Rivers (Attachment 2)

Section 11 includes the statement that the Stormwater Management Plan "is designed to dampen discharges to predevelopment rates per the Saucon Creek Watershed Act 167 Plan." The review of the Stormwater Management Plan has not been undertaken as part of this EAP review.

Section 12 further describes that the Stormwater Management Plan "is designed to dampen discharges to predevelopment rates per the Saucon Creek Watershed Act 537 Plan and the Lower Saucon Township ordinances." The review of the Stormwater Management Plan has not been undertaken as part of this EAP review, but based upon general reviews of the plans, we raise a concern that the Stormwater Management Plan may not meet the criteria of Lower Saucon Township ordinances. Among the concerns are lack of water quality volume and/or recharge as Best Management Practices and the steep side slopes of Stormwater Management basins.

1. Wetlands (Attachment 3)

- a. The response indicates that wetlands were delineated in 1991 and again in 2014, with a decrease in total wetlands from 3.74 acres to 1.32 acres, over that period. While this may have occurred, this is a sizeable change that is uncommon. Therefore, it is recommended that the most recent delineation be verified by the United States Army Corps of Engineers through a Jurisdictional Determination prior to issuing any approvals or permits for the proposed project. It should also be noted that the applicant does not identify in their response whether or not the wetlands identified and delineated are listed as Exceptional Value (EV). The wetland report for 2014 explains that nothing was observed onsite which would indicate that the wetlands are EV. Note, however, that the onsite wetlands are shown to be connected to the unnamed tributary to East Branch Saucon Creek. If a connection exists the wetland may be designated*

as EV due to the listing of East Branch Saucon Creek (and Saucon Creek) to support wild trout reproduction by the Pennsylvania Fish and Boat Commission.

- b. An environmental assessment "evaluating the wetland's functions and values" was not included with the submission, as required. Note that there is no specific discussion in Attachment 3 – Exhibit 1 which addresses each of the seven (7) sub-parts listed for such discussion as part of this required response.*

4. Parks (Attachment 4)

This section describes that the project is located within one (1) mile of the Delaware and Lehigh National Heritage Corridor, a unit of the National Parks System. The report offers the opinion that the Corridor is "not impacted" by the proposed expansion and, further, that the mountain ridge obstructs the view of the Landfill and the proposed expansion from the parks and trails along the Lehigh River Corridor. The applicant is proposing significant increases in the height of major portions of the Landfill, but has not presented any technical information to confirm the validity of the above-referenced statement. We recommend that this statement be verified by way of onsite observations using either a crane and flag or balloon raised to the elevation of the proposed cap at several locations along the cap and that observations be made from various locations along the Delaware and Lehigh National Heritage Corridor. During the review of the 2003 Permit Application, right angle cross-sections were provided to confirm "non-observation" but these cross-sections did not take into account views of the Landfill from angles either east or west of the location of the cross-section.

This section also describes the location of the Lutz Franklin Schoolhouse near Applebutter Road. If trucks delivering cover soil material approach from the east, those trucks would pass close to the Lutz Franklin Schoolhouse and adjacent Kingston Park. If this impact is proposed, it should be documented and mitigated. The travel path bringing soil cover potential to the Landfill should be identified in the traffic section.

5. Fish, Game and Plants (Attachment 5)

- a. Section 1: The response to this question is "No. See Attachment 5, Exhibit 1." The supporting information in Attachment 5, Exhibit 1, is from 2001. Given this reference, the response is insufficient, as the supporting information is outdated. Sub-parts a.-d. should be addressed, accordingly, based on updated information which sufficiently addresses this question.*
- b. Section 2: The response provided is acceptable.*
- c. Section 3: The response does not sufficiently address this item, specifically with regard to adequate correspondence with the U.S. Fish & Wildlife Service, Pennsylvania Game Commission, and the Pennsylvania Department of Conservation and Natural Resources.*

U.S. Fish & Wildlife Service

Attachment 5, Exhibit 4, states: "Per the U.S. Fish & Wildlife Service response faxed to Martin and Martin, Inc. on 09-29-2014 [date error], we note the following: Although this is

a slightly different project (different location) from the 2011 area, Attachment 3, Exhibit 1 indicates that bog turtles are not present in this location." Therefore, the response issued by the U.S. Fish & Wildlife Service is not for the current project location. Further, Attachment 3, Exhibit 1 is merely the professional opinion of John Roemer, the private consultant that performed the wetland evaluation. Mr. Roemer is not a representative of the U.S. Fish & Wildlife Service.

Pennsylvania Game Commission

*The response provided by the Pennsylvania Game Commission regarding the potential conflict with northern myotis (*Myotis septentrionalis*) is also unacceptable or incomplete. The PGC responded that a Potential Impact (is) anticipated and listed a required Conservation Measure, which is not discussed in the applicant's response. The Conservation Measure addresses a "seasonal restriction (which) is suggested to avoid potential impacts to *Myotis septentrionalis* and other tree roosting bats within the area: All trees or dead snags greater than 5 inches in diameter at breast height that need to be harvested to facilitate the project shall be cut between November 1 and March 31." There is no indication in the response that this Conservation Measure will be implemented by the applicant.*

*Based on recently released regulatory guidance by the U.S. Fish & Wildlife Service and the U.S. Army Corps of Engineers, all searches of the Pennsylvania Natural Diversity Inventory (PNDI) conducted prior to May 4, 2015, are no longer acceptable and must be renewed to address potential conflicts with the long-eared bat (*Myotis septentrionalis*). Therefore, the application which is currently under review by the Township should address this new requirement. Presumably, this will only require the applicant to provide an updated PNDI Project Environmental Review Receipt. It will be the applicant's responsibility, however, to fully address any additional requirements related to *Myotis septentrionalis*, as well as any additional Potential Conflicts listed on the updated PNDI Project Environmental Review Receipt.*

Pennsylvania Department of Conservation and Natural Resources

*The applicant provided materials sent to the Pennsylvania Department of Conservation and Natural Resources to address a Potential Impact to *Ellisia (Ellisia nyctelea)*, as listed on the PNDI Project Environmental Review Receipt. No return correspondence or the required resolution was provided by the applicant.*

- d. Section 4: The response provided may be acceptable, if all issues noted above in Item 3 are fully addressed as required by the respective regulatory agencies.*
- e. Section 5: The response provided is acceptable, based on a review of available data from the Pennsylvania Fish and Boat Commission (PFBC), noting that the correspondence provided in the application is not directly from the PFBC but rather an e-mail describing a telephone conversation with Tom Green, a PFBC representative.*
- f. Section 6: The response provided is acceptable, based on a review of available data from the Pennsylvania Fish and Boat Commission (PFBC), noting that the correspondence provided in the application is not directly from the PFBC but rather an e-mail describing a telephone conversation with Tom Green, a PFBC representative.*

- g. *Section 7: The response provided is acceptable.*
- b. *Section 8: The response provided is incomplete, as follows by sub-item:*
- (1) a. *The response identifies the stream on site, but does not identify "the location of the stream(s) in relation to the project."*
 - (2) b. *The response does not identify the fish species present within the stream on-site, but rather simply lists "unknown."*
 - (3) c. *The response provided is acceptable.*
 - (4) d. *The response provided is not acceptable, as there is nothing offered as support for the finding of "None Anticipated" for what is generally accepted as a high impact land-use.*
 - (5) e. *The response provided is not acceptable. The response notes that "The Project will conform to all stormwater rules and regulations of the PA DEP, Northampton County, and Lower Saucon Township." The response does not include any supporting information regarding the measures to be taken to minimize adverse impacts to groundwater inputs that support the stream channel. This is of particular concern, noting the reported decrease in wetlands on the site by 50% between the period from 1991 through 2014, which may be attributable to ongoing on-site activities and associated impacts.*
- i. *Section 9: The response provided is acceptable.*
- (1) a. *The response provided is acceptable.*
 - (2) B.. *The response provided is acceptable.*

Section 8 Subsection E of this attachment repeats the statement that the project will "conform to all stormwater rules and regulations of the DEP, Northampton County and Lower Saucon Township." As mentioned above, we have not yet reviewed the Stormwater Management Plans for this project.

Section 9.a describes that Landfill truck traffic will turn left onto Shimersville Road and will, therefore, "not present any impact to the river corridor." This statement does not provide any information with regard to trucks bringing soil cover onto the site from off-site sources. Depending upon the route taken for soil delivery trucks (arriving and leaving), the areas of impact for new truck traffic may be substantially larger than the areas of impact for landfill trucks.

1. Water Uses (Attachment 6)

Exhibit 3 for this report is a letter identifying off-site public water well supplies in the area of the Landfill. It is dated August 30, 2001, and we recommend that this evaluation be updated.

2. Recreation (Attachment 7)

This report indicates that the parks and trails along the Lehigh River Corridor are obstructed from view of the Landfill. It is requested that this be verified by field inspections as described above and that, if the Landfill is visible from these locations, mitigation be provided to minimize any adverse impacts.

Report indicates that the Lutz Franklin Schoolhouse will not be affected by the project. The applicant should identify the travel routes of trucks bringing offsite soil cover to the Landfill in order to determine whether or not these trucks would create an impact on the Lutz Franklin Schoolhouse and adjacent Kingston Park.

The applicant has not identified whether or not the Landfill expansion will have any impacts on the historic and archeological features of the area including the Applebutter Road Historic Area.

The applicant has not identified whether or not odors from the proposed expansion will adversely affect citizens utilizing the Steel City Park, the Delaware and Lehigh National Corridor, and/or the Kingston Park.

3. Historic and Archeologic impacts (Attachment 8)

This report indicates that the proposed expansion will not have any negative impact on the Applebutter Road Historic Area. If trucks carrying offsite cover soil material to the Landfill travel through or past this area, there may be noise, odor, and vibration impacts.

This section did not include a response from the Pennsylvania Historical and Museum Commission to a letter from Martin Martin, dated August 4, 2014. If a response was provided, it should be included in this section.

4. Airports (Attachment 9)

No Comments

In summary the TCC provides the following comments(*):

Odors – While IESI has recently proposed additional odor minimization and mitigation measures for their current operations, the measures utilized since approximately 2012 (thru September) have not been adequate to address the odor complaints from residential neighborhoods. Additionally, it is recognized that IESI is proposing some additional specific measures to reduce the risk of odor at the locations of “Waste Relocation” (reference Attachment 12 the PPC Plan, attachment #4). Specific information with regard to odor control during the waste relocation process, phasing and size of phase, daily intermediate and final cover and capping should be provided and/or improvement to the gas collection system and flare system should be described so that mitigation of odors can be demonstrated to the satisfaction of PaDEP. Further IESI should provide information to confirm that their proposed expansion complies with applicable PaDEP setback requirements from occupied dwellings and/or properties with occupied dwellings. (*)

Noise – The potential for noise impacts on residents immediately to the southeast of the landfill has been identified in Attachment 8. Although the analysis provided concludes that the noise impact will not exceed Township Regulations (Zoning Ord. 180-96), IESI should provide information to

confirm that their proposed expansion complies with applicable PaDEP setback requirements from occupied dwellings and/or properties with occupied dwellings. (*)

Traffic – The hours of operation and location of direction should be identified for construction material and cover soil trucks approaching and leaving the site, and the nuisance of this additional traffic should be identified and IESI should describe any measures they propose to mitigate the nuisance. The road capacity and safety conditions along Applebutter Road and Shimersville Road should be reevaluated and updated to address existing conditions and the proposed additional volume and duration of heavy traffic. If road capacity and/or safety deficiencies are found IESI should describe any measures they propose to mitigate these deficiencies. (*)

On behalf of the Township Technical Consultant Committee, we recommend that the Township forward these comments to the Zoning Hearing Board and to the applicant for their use and consideration.

All the comments and questions in this letter are provided to a reasonable degree of engineering certainty.

If you have any comments or questions on this review, please let me know.

Respectfully,

HANOVER ENGINEERING ASSOCIATES, INC.



James B. Birdsall P.E.

Township Engineering Representative to the Township Technical Consultant Committee

jbb:cat/llb/dad

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Enclosure(s)